

What is claimed is:

1. An even harmonic mixer, which comprises:

a local oscillator input terminal, the local oscillator input terminal inputting a local oscillator signal;

at least one anti-parallel, series-pair configuration of diodes, the at least one anti-parallel, series-pair configuration of diodes being responsive to the local oscillator signal, the at least one anti-parallel, series-pair configuration of diodes outputting an intermediate frequency signal; and

a radio frequency/intermediate frequency terminal, the radio frequency/intermediate frequency terminal being responsive to the intermediate frequency signal output by the at least one anti-parallel, series-pair configuration of diodes, the radio frequency/intermediate frequency terminal inputting a radio frequency signal, the at least one anti-parallel, series-pair configuration of diodes being responsive to the radio frequency signal input by the radio frequency/intermediate frequency terminal.

2. An even harmonic mixer as defined by Claim 1, further comprising at least one transformer, the at least one transformer being electrically connected between the local oscillator input terminal and the at least one anti-parallel, series-pair configuration of diodes.

3. An even harmonic mixer as defined by Claim 2, wherein the transformer includes a slotline balun transformer.

4. An even harmonic mixer as defined by Claim 1, further comprising at least one coplanar waveguide, the at least one coplanar waveguide being electrically connected between the at least one anti-parallel, series-pair configuration of diodes and the radio frequency/intermediate frequency terminal.

5. An even harmonic mixer as defined by Claim 1, wherein the at least one anti-parallel, series-pair configuration of diodes includes a plurality of diodes, the plurality of diodes being electrically connected together in

series, each of the plurality of diodes including an anode and a cathode, the anode of each of the plurality of diodes being coupled to the cathode of at least one other of the plurality of diodes, the cathode of each of the plurality of diodes being coupled to the anode of at least one other of the plurality of diodes.

6. An even harmonic mixer as defined by Claim 1, wherein the at least one anti-parallel, series-pair configuration of diodes includes four diodes.

7. An even harmonic mixer as defined by Claim 2, wherein the anode of one of the plurality of diodes of the at least one anti-parallel, series-pair configuration of diodes and the cathode of at least one other of the plurality of diodes of the at least one anti-parallel, series-pair configuration of diodes are coupled to the at least one transformer.

8. An even harmonic mixer as defined by Claim 1, wherein the radio frequency/intermediate frequency terminal is coupled to the anode of one of the plurality of diodes of the at least one anti-parallel, series-pair configuration of diodes and the cathode of at least one other of the plurality of diodes of the at least one anti-parallel, series-pair configuration of diodes.

9. An even harmonic mixer as defined by Claim 1, wherein the even harmonic mixer includes two anti-parallel, series-pair configurations of diodes, the two anti-parallel, series-pair configurations of diodes being electrically connected in parallel.

10. An even harmonic mixer as defined by Claim 1, wherein the even harmonic mixer includes four anti-parallel, series-pair configurations of diodes, the four anti-parallel, series-pair configurations of diodes being electrically connected in a series ring configuration.

11. A method of even harmonic mixing, which comprises the steps of:

inputting a local oscillator signal;

coupling at least one anti-parallel, series-pair configuration of diodes to the input local oscillator signal;

inputting a radio frequency signal to the at least one anti-parallel, series-pair configuration of diodes; and

outputting an intermediate radio frequency signal from the at least one anti-parallel, series-pair configuration of diodes.

12. A method of even harmonic mixing as defined by Claim 11, further comprising the step of transforming the local oscillator signal electrically.

13. A method of even harmonic mixing as defined by Claim 12, wherein the local oscillator signal is electrically transformed with a slotline balun transformer.

14. A method of even harmonic mixing as defined by Claim 11, further comprising the step of coupling at least one coplanar waveguide to the at least one anti-parallel, series-pair configuration of diodes.

15. A method of even harmonic mixing as defined by Claim 11, wherein the step of coupling the at least one anti-parallel, series-pair configuration of diodes to the local oscillator signal further comprises the step of coupling a plurality of diodes electrically together in series, each of the plurality of diodes including an anode and a cathode, the anode of each of the plurality of diodes being coupled to the cathode of at least one other of the plurality of diodes, the cathode of each of the plurality of diodes being coupled to the anode of at least one other of the plurality of diodes.

16. A method of even harmonic mixing as defined by Claim 11, wherein the step of coupling the at least one anti-parallel, series-pair configuration of diodes to the local oscillator signal further comprises the step of coupling the anode of one of the plurality of diodes of the at least one anti-parallel, series-pair configuration of diodes and the cathode of another one of the plurality of diodes of the at least one anti-parallel, series-pair configuration of diodes to the local oscillator signal.

17. A method of even harmonic mixing as defined by Claim 14, wherein the step of outputting a radio frequency signal from the at least one

anti-parallel, series-pair configuration of diodes further comprises the step of outputting the radio frequency signal from the anode of one of the plurality of diodes of the at least one anti-parallel, series-pair configuration of diodes and the cathode of at least one other of the plurality of diodes of the at least one anti-parallel, series-pair configuration of diodes.

18. A method of even harmonic mixing as defined by Claim 11, further comprising the step of coupling two anti-parallel, series-pair configurations of diodes electrically in parallel.

19. A method of even harmonic mixing as defined by Claim 11, further comprising the step of coupling four anti-parallel, series-pair configurations of diodes electrically in a series configuration.

20. An even harmonic mixer, which comprises:

a local oscillator input terminal, the local oscillator input terminal inputting a local oscillator signal;

a slotline balun transformer, the slotline balun transformer being responsive to the local oscillator signal;

two anti-parallel, series-pair configurations of diodes, the two anti-parallel, series-pair configurations of diodes being responsive to the local oscillator signal, the slotline balun transformer being electrically connected between the local oscillator input terminal and the two anti-parallel, series-pair configurations of diodes, the two anti-parallel, series-pair configurations of diodes outputting an intermediate frequency signal, each of the two anti-parallel, series-pair configurations of diodes including a plurality of diodes, the plurality of diodes being electrically connected together in series, each of the plurality of diodes including an anode and a cathode, the anode of each of the plurality of diodes being coupled to the cathode of at least one other of the plurality of diodes, the cathode of each of the plurality of diodes being coupled to the anode of at least one other of the plurality of diodes; and

a radio frequency/intermediate frequency terminal, the radio frequency/intermediate frequency terminal being responsive to the

intermediate frequency signal output by the two anti-parallel, series-pair configurations of diodes, the radio frequency/intermediate frequency terminal inputting a radio frequency signal, the two anti-parallel, series-pair configurations of diodes being responsive to the radio frequency signal input by the radio frequency/intermediate frequency terminal.

21. An even harmonic mixer as defined by Claim 20, further comprising at least one coplanar waveguide, the at least one coplanar waveguide being electrically connected between the two anti-parallel, series-pair configuration of diodes and the radio frequency/intermediate frequency terminal.

22. An even harmonic mixer as defined by Claim 20, wherein at least one of the two anti-parallel, series-pair configurations of diodes includes four diodes.

23. An even harmonic mixer as defined by Claim 20, wherein the anode of one of the plurality of diodes of at least one of the two anti-parallel, series-pair configurations of diodes and the cathode of at least one other of the plurality of diodes of at least one of the two anti-parallel, series-pair configurations of diodes are coupled to the slotline balun transformer.

24. An even harmonic mixer as defined by Claim 20, wherein the radio frequency/intermediate frequency terminal is coupled to the anode of one of the plurality of diodes of at least one of the two anti-parallel, series-pair configurations of diodes and the cathode of at least one other of the plurality of diodes of at least one of the two anti-parallel, series-pair configurations of diodes.